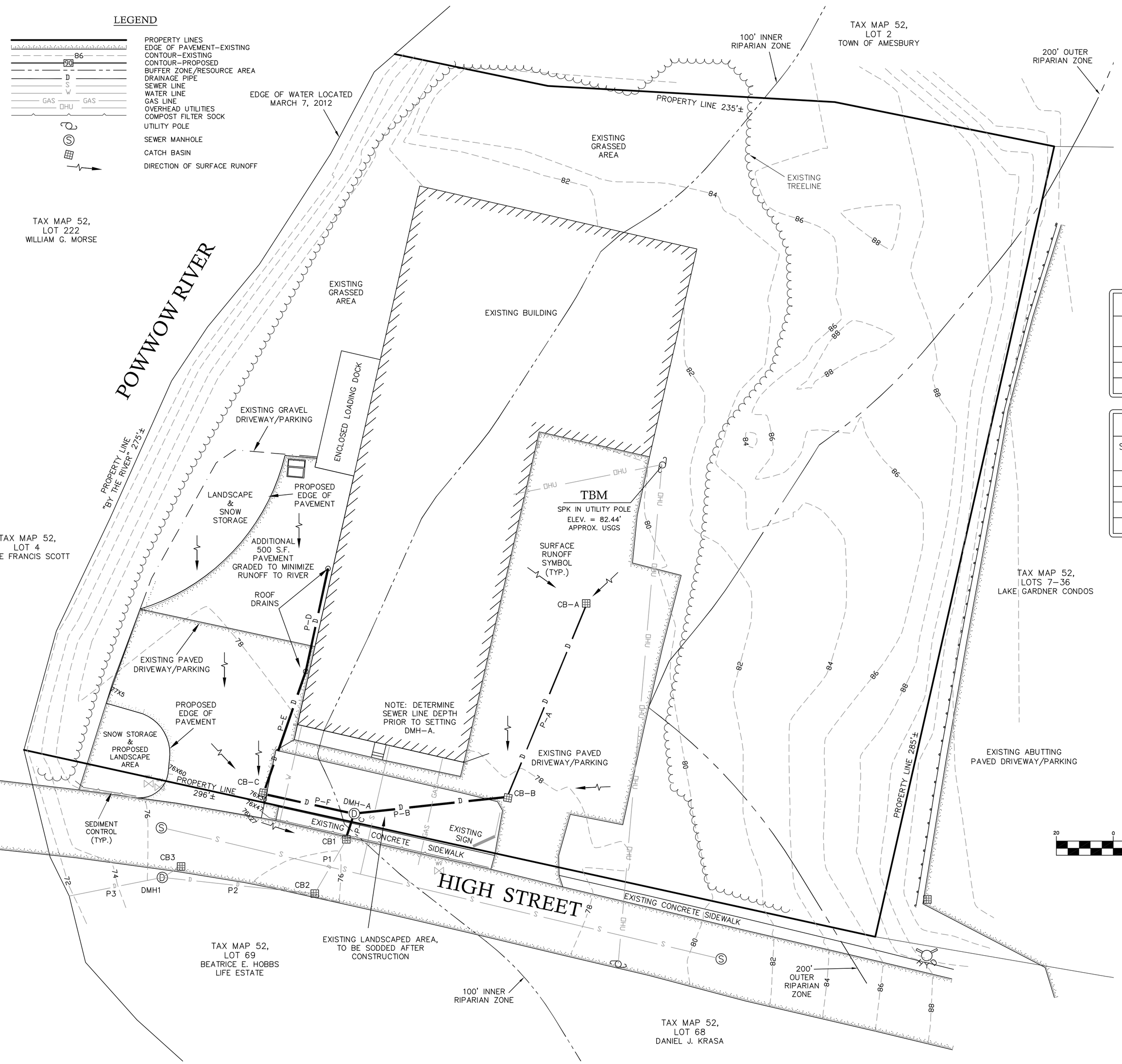
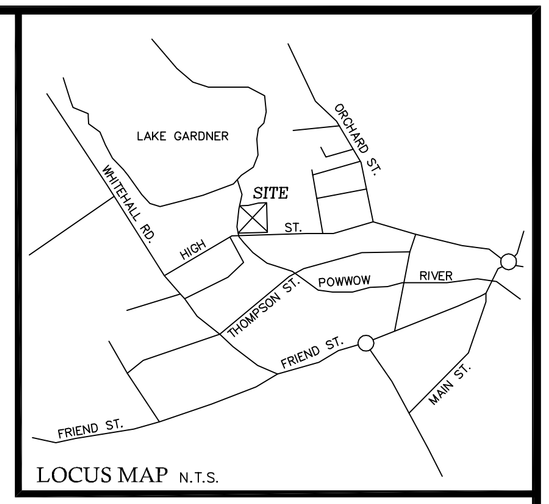




LOCUS MAP N.T.S.

EXISTING

DRAINAGE PIPING SCHEDULE

PIPE	LENGTH (ft)	DIAMETER (in.)	INVERT IN (ft)	INVERT OUT (ft)	SLOPE (%)
P1	18	10	73.26	73.00	1.4
P2	50	10	72.50	71.73	1.5
P3	31	12	71.23	71.29	0.0

DRAINAGE STRUCTURE SCHEDULE

STRUCTURE	RIM (ft)	INVERT IN (ft)	INVERT OUT (ft)
CB1	76.06	–	73.26 – TO CB2
CB2	75.80	73.00	72.50 – TO DMH1
CB3	76.24	–	–
DMH1	76.83	71.73	71.23 – TO RIVER

PROPOSED

DRAINAGE PIPING SCHEDULE

PIPE	LENGTH (ft)	DIAMETER (in.)	INVERT IN (ft)	INVERT OUT (ft)	SLOPE (%)
P–A	74	10	75.8	74.5	1.8
P–B	51	10	74.3	73.6	1.3
P–C	6	10	73.36	73.3	1.0
P–D	40	8	75.7	75.3	1.0
P–E	43	10	75.3	74.0	3.0
P–F	43	10	73.9	73.46	1.0

P–A & P–B: 10" PERFORATED HIGH DENSITY POLYETHYLENE
P–C 10", HIGH DENSITY POLYETHYLENE
P–D 8" PERFORTATED HIGH DENSITY POLYETHYLENE
P–E & P–F: 10" PERFORATED HIGH DENSITY POLYETHYLENE

DRAINAGE STRUCTURE SCHEDULE

STRUCTURE	RIM (ft)	INVERT IN (ft)	INVERT OUT (ft)
CB–A	78.8	——	75.8– TO CB–B
CB–B	77.4	74.5	74.3 – TO DMH–A
DMH–A	77.0	73.46	73.36 – TO CB1
CB–C	76.30	74.0	73.90 – TO DMH–A

NOTE:
THE UNDERGROUND UTILITIES HEREON HAVE BEEN TAKEN FROM A VARIETY OF SOURCES AND ARE SCHEMATIC ONLY. THE ACCURACY, LOCATION, AND COMPLETENESS OF SAID UTILITIES IS NEITHER IMPLIED NOR GUARANTEED BY THE PROPERTY OWNER OR ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY OF TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES WHERE SUCH ACTION IS REQUIRED TO COMPLETE THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR CONSULTING WITH THE PROPER AUTHORITIES REGARDING THE SUBJECT UTILITY AND SERVICE LOCATIONS, AND TO CALL DIG–SAFE AT 1–888–DIG–SAFE.

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

COMMONWEALTH OF MASSACHUSETTS
DENNIS G. QUINTAL
CIVIL
No. 37427
PROFESSIONAL ENGINEER

DENNIS G. QUINTAL, P.E. AUGUST 17, 2021 DATE

#	DATE	REVISION
1	8–17–21	ADD CB–C TO CAPTURE SURFACE RUNOFF WEST OF BLDG

DRAINAGE IMPROVEMENT PLAN

TAX MAP 52 - LOT 5
91 HIGH STREET
AMESBURY, MA

OWNER/APPLICANT: ALKIM, LLC
91 HIGH STREET
AMESBURY, MA 01913

DESIGN BY:
Civil Construction Management Inc.
8 Merrimac Road, Box 475
Newton, NH 03858
Tel (603) 382-7650

DESIGNED BY: D. QUINTAL, PE DATE: JULY 2021

Sheet: 1 OF 2

JOB #12018

CONSTRUCTION SEQUENCE

THE CONSTRUCTION SEQUENCE PROVIDES THE OWNER AND CONTRACTOR WITH A RECOMMENDED ORDER OF CONSTRUCTION THAT WILL MINIMIZE EROSION AND TRANSPORT OF SOIL SEDIMENTS. IT IS NOT INTENDED TO PRESCRIBE DEFINITIVE CONSTRUCTION METHODS BUT BE USED AS A GENERAL GUIDE. EACH OF THE FOLLOWING OBJECTIVES SHALL BE CONSIDERED AN INTEGRAL PART OF THE PROJECT DESIGN. MODIFICATIONS TO THE SEQUENCE MAY BE NECESSARY DUE TO SITE CONSTRAINTS OR WEATHER CONDITIONS. THE OVERALL INTENT IS TO MINIMIZE THE ENVIRONMENTAL IMPACT OF THE CONSTRUCTION PROCESS.

GENERAL TIMELINE
START OF CONSTRUCTION: JULY 15–31, 2012
END OF CONSTRUCTION: SEPTEMBER 15–30, 2012

ALL CONSTRUCTION SHALL COMPLY WITH THE "MASSACHUSETTS STORM WATER HANDBOOK".

A. PRIOR TO THE START OF ANY ACTIVITY, IT IS THE RESPONSIBILITY OF THE SITE DEVELOPER (OR OWNER) TO OBTAIN A NOTICE OF INTENT (NOI) FROM THE LOCAL CONSERVATION COMMISSION. THE DEVELOPER (OR OWNER) SHALL PROVIDE TO THE SITE'S GENERAL CONTRACTOR A COPY OF THE NOTICE OF INTENT (NOI). THE SITE'S GENERAL CONTRACTOR SHALL HAVE A FULL UNDERSTANDING OF THE REQUIREMENTS OF THE NOTICE OF INTENT (NOI), AND AT ALL TIMES BE IN COMPLIANCE WITH THOSE REQUIREMENTS.

B. SURVEY & PROJECT STAKEOUT.
THE PROJECT SURVEYOR SHALL STAKEOUT THE PHYSICAL LOCATIONS OF: DRAINAGE AREAS, DRAINAGE STRUCTURES, LIMITS OF CLEARING, AND LOCATION OF SALUTATION CONTROL MEASURES.

C. PRE–CONSTRUCTION MEETING.
PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL REVIEW ALL PLANS, REPORTS, DOCUMENTS AND PERMITS ASSOCIATED WITH THE PROJECT. THE CONTRACTOR SHALL HAVE PROPER INSURANCE AND BONDING. DIG SAFE SHALL BE NOTIFIED. A PRE CONSTRUCTION MEETING SHALL BE HELD ON THE SITE WITH THE OWNER, CONTRACTOR, DESIGN ENGINEER, AND OTHERS AS APPROPRIATE. THE INTENT WILL BE TO ESTABLISH A WORKING UNDERSTANDING AMONG THE PARTIES AS TO THE PROPOSED WORK, SCHEDULE OF EVENTS AND RESPONSIBILITIES OF EACH PARTY.

D. ESTABLISH SEDIMENT CONTROL
ALL SEDIMENT CONTROL MEASURES WITHIN 100 LINEAR FEET OF ANY PROPOSED CONSTRUCTION WORK SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL NOT DISTURB AN AREA LARGER THAN HE IS ABLE TO CONTROL. ALL MEASURES FOR SEDIMENT CONTROL SHALL BE INSPECTED DAILY BY THE CONTRACTOR. ANY SILT COLLECTED BY THE DEVICES WILL BE COLLECTED AND PLACED ON SITE IN A DESIGNATED FILL AREA OR REMOVED FROM THE SITE. THE DEVICES SHALL BE EVALUATED AND MODIFIED IF NECESSARY TO CONTROL SEDIMENTATION. TOWN ROADS SHALL BE KEPT CLEAR FROM ALL DEBRIS FROM THE SITE CONSTRUCTION PROCESS.

E. VEGETATION AND STUMP REMOVAL.
ALL TREES AND BRUSH SHALL BE REMOVED FROM THE CONSTRUCTION AREA. WHEEL RUTS SHALL BE SMOOTHED AND MULCHED TO MINIMIZE CHANNELING STORMWATER RUNOFF AND EROSION. SMALL TREES AND BRUSH SHALL BE CHIPPED. STUMPS AND ROOTS SHALL BE REMOVED FROM THE SITE OR GROUND INTO SMALL CHIPS. ALL CHIP MATERIAL CAN BE USED ON EXPOSED SLOPES FOR EROSION CONTROL.

F. STRIP TOPSOIL.
TOPSOIL SHALL BE REMOVED FROM EACH WORK AREA AND STOCK PILED ON SITE. PILES SHALL BE LOCATED ON A FLAT SURFACE IF POSSIBLE. SEDIMENT CONTROL SHALL BE INSTALLED ON THE DOWN SLOPE EDGE OF EACH PILE TO COLLECT ANY SEDIMENT RUNOFF. IF PILES ARE TO BE LEFT FOR AN EXTENDED PERIOD (30 DAYS), THEY SHALL BE SEEDED AND MULCHED WITH HAY, TO ESTABLISH A QUICK VEGETATED COVER AND MINIMIZE EROSION.

G. CUT & FILL FOR DRAINAGE FACILITIES AND TO SUBGRADE.
ALL STORMWATER DRAINAGE FACILITIES SHALL BE CONSTRUCTED IN THE INITIAL STAGES OF DEVELOPMENT. UPON COMPLETION, THE FACILITIES SHALL BE LOAMED, SEEDED AND MULCHED TO ACHIEVE STABILIZATION PRIOR TO DIRECTING FLOW TO THESE AREAS. THE CONTRACTOR SHALL MAKE EXCAVATIONS TO A DEPTH ONLY NECESSARY FOR INSTALLATION OF THE PROPOSED PROJECT. OVER EXCAVATING CAN LEAD TO PRODUCTION OF EXCESS MATERIAL AND MAKE SITE STABILIZATION MORE DIFFICULT. PROPER PLANNING OF SOIL MOVEMENT WILL MINIMIZE TEMPORARY STOCKPILING OF FILL. ANY AREAS THAT NEED FILL SHALL BE PREPARED FIRST. CUT MATERIAL CAN THEN BE PLACED AND COMPACTED DIRECTLY INTO A FILL ZONE. PILES SHALL BE LOCATED ON A FLAT SURFACE IF POSSIBLE. IF PILES ARE TO BE EXPOSED FOR 14 DAYS OR MORE, THEY SHALL BE SEEDED AND MULCHED WITH HAY TO ESTABLISH A QUICK VEGETATED COVER AND MINIMIZE EROSION. IF NECESSARY, AT THE END OF EACH WORK DAY SURFACE RUNOFF DIVERSION TRENCHES SHALL BE CREATED TO DIVERT ANY STORM RUNOFF INTO STAKED HAY BALES, A TEMPORARY SEDIMENT BASIN, LEVEL SPREADER OR BERM OF STONE GRAVEL. THESE MEASURES ARE RECOMMENDED AS BMPS EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION. THESE MEASURES SHALL BE MONITORED BY THE CONTRACTOR ON A DAILY BASIS TO ENSURE PROPER FUNCTIONING. APPLY WATER TO CONTROL DUST, BUT AVOID OVERWATERING THAT CAN LEAD TO EROSION.

H. SLOPES LOAM, SEED, MULCHED.
EACH SLOPE AREA, ONCE EXPOSED FOR CUT OR FILL, SHALL BE BROUGHT TO GRADE IN THE SHORTEST TIME POSSIBLE. 4 INCHES OF ORGANIC RICH TOPSOIL SHALL BE SPREAD AND RAKED FREE FROM LARGE ROOTS AND ROCKS. GRASS SEED SHALL BE DISTRIBUTED ACCORDING TO THE TYPE AND RATE CHART PROVIDED BELOW. ON SLOPES GREATER THAN 4:1, OR DURING SPRING OR FALL, THE SEEDED AREAS WILL BE MULCHED WITH HAY.

I. INSTALL GRAVEL SUBGRADE FOR PAVEMENT AND SIDEWALK PATCH AREAS.
THE SUBGRADE SHALL CONSIST OF CRUSHED GRAVEL, FREE FROM LOAM AND CLAY, SURFACE COATINGS AND DELETERIOUS MATERIALS. THE ENTIRE AREA SHALL BE COMPACTED TO 95 PERCENT OF DRY DENSITY.

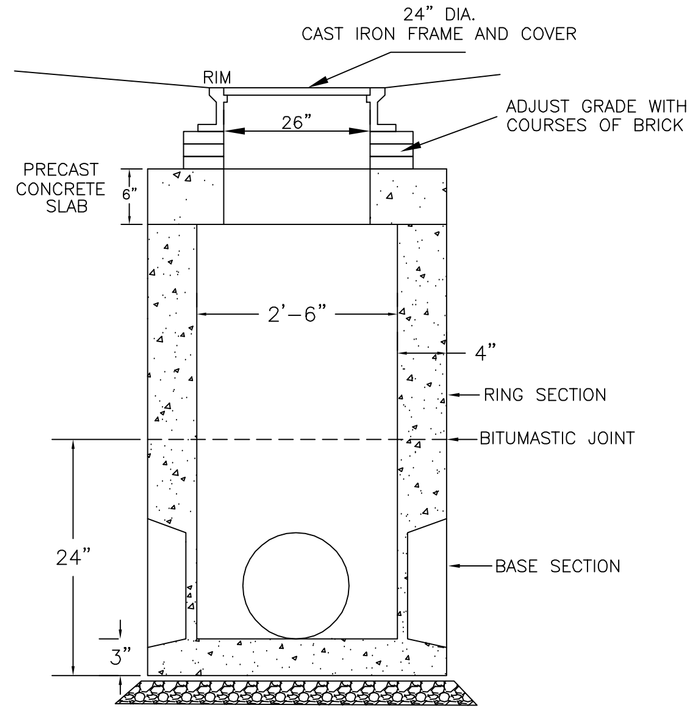
J. INSTALL SURFACE PAVEMENT AND CONCRETE SIDEWALK PATCHES.
BITUMINOUS CONCRETE PAVEMENT SHALL BE INSTALLED AT THE SAME THICKNESS AS THE EXISTING PAVEMENT. PAVEMENT SHALL BE COMPATED TO MATCH THE SURROUNDING PAVEMENT LEVEL. THE CONCRETE SIDEWALK SHALL BE CONSTRUCTED WITH 5000 PSI CONCRETE. PRE–FORMED JOINT FILLER SHALL BE USED FOR EXPANSION JOINTS ON EACH SIDE OF THE PATCH. THE LEVEL OF THE PATCH SHALL MATCH THE SURROUNDING SIDEWALK.

K. FINISH GRADE, LOAM & SEED.
THE SEED BED AREA SHALL BE TILLED BUT LEFT IN A FIRM AND SEMI–SMOOTH CONDITION. ALL SLOPES GREATER THAN 3 TO 1 WILL BE MULCHED WITH WOOD CHIPS, HAY OR WITH JUTE OR FIBROUS MATTING FOR EROSION CONTROL. IF THE SEEDING FAILS TO GROW, IT MAY NEED TO BE RE–ESTABLISHED TO PROVIDE ADEQUATE SOIL STABILIZATION PROTECTION. FOR LONG TERM VEGETATIVE COVER IT IS IMPORTANT TO PREPARE AN ADEQUATE SEED BED AND SELECT THE PROPER SEED MIXTURE. ALL EXPOSED AREAS SHALL BE COVERED WITH A 4 INCH LAYER OF ORGANIC RICH TOPSOIL. ALL STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED. THE SEEDBED MUST BE LEFT REASONABLY FIRM AND IN A SEMI–SMOOTH CONDITION.

L. UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR (OR OWNER) SHALL NOTIFY THE DESIGN ENGINEER TO MEASURE AND PREPARE AN AS–BUILT PLAN. THE AS–BUILT PLAN SHALL BE PROVIDED TO LOCAL CONSERVATION COMMISION, AS REQUIRED TO COMPLETE THE CERTIFICATION OF COMPLIANCE WITH THE ISSUED NOTICE–OF–INTENT.

SEEDING SHALL BE DONE WHEN WEATHER CONDITIONS ARE FAVORABLE, BETWEEN APRIL 1 THROUGH OCT. 15. SEED SHALL BE SOWN AT THE FOLLOWING MIXTURE AND RATE, ON A CALM DAY BY HAND OR MACHINE.

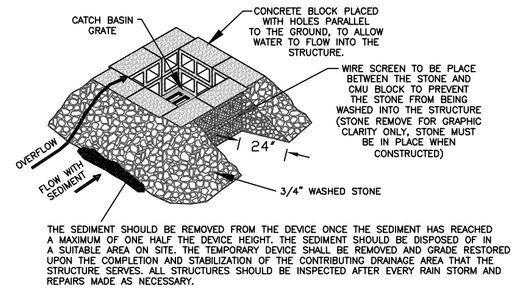
PERMANENT SEED TYPE	APPLICATION RATE
CREEPING RED FESCUE	50.00 LBS/ACRE
KENTUCKY BLUEGRASS	32.25 LBS/ACRE
KENTUCKY 31 FESCUE	30.25 LBS/ACRE
WHITE CLOVER	12.50 LBS/ACRE
TOTAL	123.00 LBS/ACRE



6" MINIMUM BEDDING:
SCREENED GRAVEL AND/OR CRUSHED STONE
FREE FROM CLAY, LOAM, ORGANIC MATTER.

1. CONCRETE COMPRESSIVE STRENGTH – 5000 PSI @ 28 DAYS.
2. DESIGNED FOR H–20 LOADING

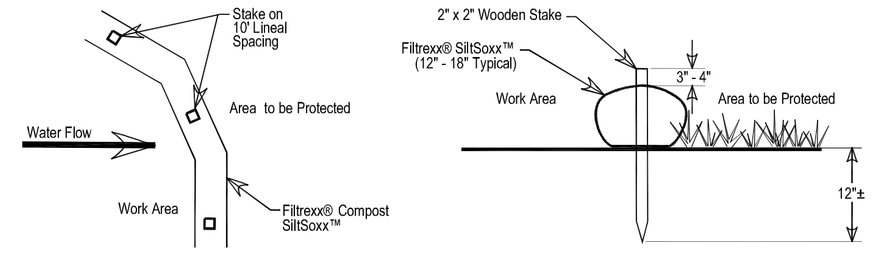
MINI MANHOLE DETAIL
BY SHEA CONCRETE PRODUCTL N.T.S.



THE SEDIMENT SHOULD BE REMOVED FROM THE DEVICE ONCE THE SEDIMENT HAS REACHED A MAXIMUM OF ONE HALF THE DEVICE HEIGHT. THE SEDIMENT SHOULD BE DISPOSED OF IN A SUITABLE AREA ON SITE. THE TEMPORARY DEVICE SHALL BE REMOVED AND GRADE RESTORED UPON THE COMPLETION AND STABILIZATION OF THE CONTRIBUTING DRAINAGE AREA THAT THE STRUCTURE SERVES. ALL STRUCTURES SHOULD BE INSPECTED AFTER EVERY RAIN STORM AND REPAIRS MADE AS NECESSARY.

TEMPORARY CATCH BASIN INLET PROTECTION
N.T.S.

CONTRACTOR MAY SUBSTITUTE AN ALTERNATIVE COMPOST FILTER SOCK FOR FILTREX SILTSOXX IF APPROVED BY DESIGN ENGINEER



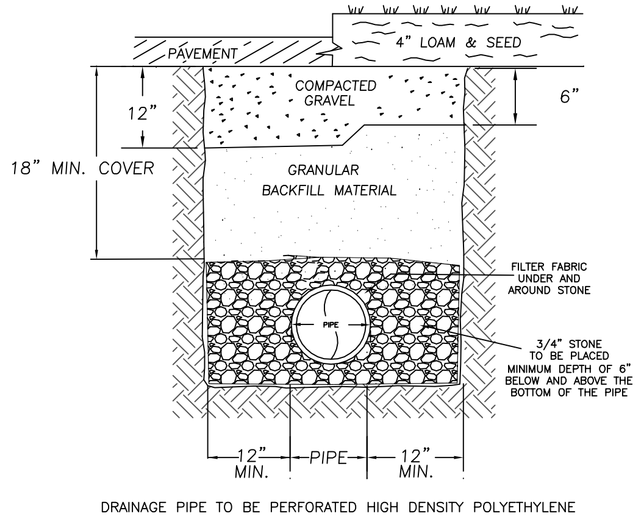
Notes:
1. All material to meet Filtrexx® specifications .
2. SiltSoxx™ compost/ soil /rock/seed fill to meet application requirements.
3. SiltSoxx™ depicted is for minimum slopes. Greater slopes may require larger socks per the Engineer.
4. Compost material to be dispersed on site, as determined by Engineer.

Maintenance Requirements:
Filtrexx SiltSoxx should be regularly inspected to make sure they hold their shape and are producing adequate flow through. If ponding becomes excessive, and sediment reaches the top of the Soxx, additional Soxx should be added in the areas without disturbance of soil or collected sediment.

When construction is completed on site, the Soxx may be dispersed with a loader, rake, bulldozer or other device to be incorporated in the soil or left on top of the soil for final seeding to occur. The mesh netting material will be collected and disposed of in normal trash container or removed by the Contractor. In cases where biodegradable or photodegradable products are used, they may be left on site at the direction of the engineer.

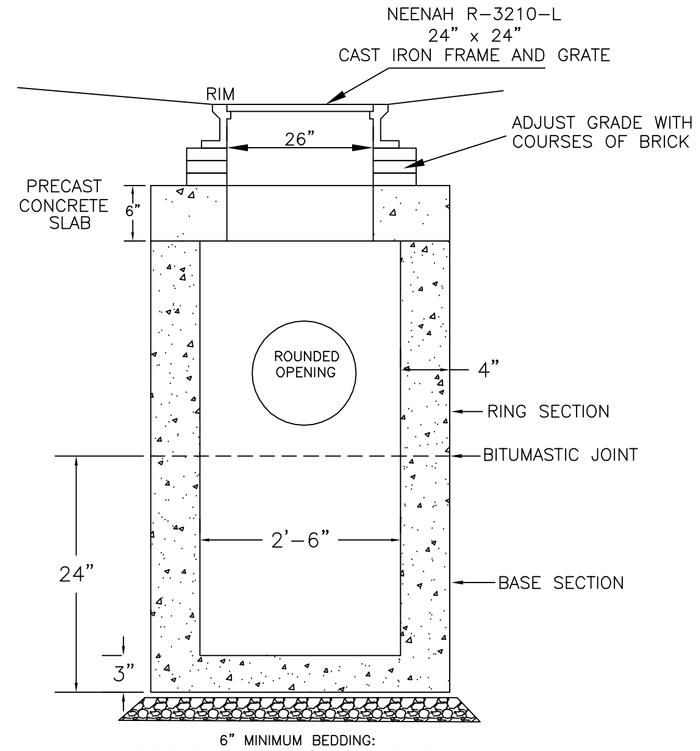
1. The Contractor shall maintain the SiltSoxx in a functional condition at all times and it shall be routinely inspected.
2. Where the Soxx requires repair, it will be routinely repaired.
3. The contractor shall remove sediment collected at the base of the Soxx when they reach 1/2 of the exposed height of the Soxx, or as directed by the Engineer. Alternatively, rather than create a soil disturbing activity, the engineer may call for additional Soxx to be added at areas of high sedimentation, placed immediately on top of the existing sediment laden SiltSoxx.
4. The SiltSoxx will be dispersed on site when no longer required, as determined by the Engineer.

SEDIMENT CONTROL COMPOST FILTER SOCK DETAIL
N.T.S.



DRAINAGE PIPE TO BE PERFORATED HIGH DENSITY POLYETHYLENE SURROUNDED WITH 3/4" STONE AND WRAPPED WITH FILTER FABRIC. PIPE DRAINAGE PIPE TO BE LAID TO GRADE AT THE APPROXIMATE BOTTOM OF THE EXISTING SWALE.

DRAINAGE TRENCH DETAIL
N.T.S.



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2. DESIGNED FOR H–20 LOADING

MINI CATCH BASIN DETAIL
BY SHEA CONCRETE PRODUCTL N.T.S.

#	DATE	REVISION

DRAINAGE IMPROVEMENT PLAN

TAX MAP 52 - LOT 5
91 HIGH STREET
AMESBURY, MA

OWNER/APPLICANT: ALKIM, LLC
91 HIGH STREET
AMESBURY, MA 01913

COMMONWEALTH OF MASSACHUSETTS
DENNIS G. QUINTAL
CIVIL
No. 37427
REGISTERED PROFESSIONAL ENGINEER

AUGUST 17, 2021
DENNIS G. QUINTAL, P.E. DATE

DESIGN BY:
Civil Construction Management Inc.
8 Merrimac Road, Box 475
Newton, NH 03858
Tel (603) 382-7650

DESIGNED BY: D. QUINTAL, PE DATE: JULY 2021

Sheet: 2 OF 2

JOB #12018